op vroegtijdige overlijden van mensen in de algemene populatie gekwantificeerd. De uitgevoerde meta-analyse bevat data van 11 cohort studies (in totaal 65019 deelnemers) en laat zien dat verhoogde basale cardiale troponineconcentraties samenhangen met een grotere de kans op vroegtijdig overlijden.

Tot slot bevat hoofdstuk 12 een algemene discussie over het in dit proefschrift beschreven werk en worden suggesties voor vervolgonderzoek aangedragen.
This chapter describes the (future) valorization of the research described in this thesis. Valorization is thereby defined as the social and economic relevance of research, the target populations of the findings, the related concrete products, services, processes and activities, their innovativeness and future directions.

Relevance

According to the World Health Organization (WHO), cardiovascular disease, of which acute myocardial infarction is considered as an important entity, is the world’s number one killer, responsible for approximately 31% of all deaths worldwide. Along, cardiovascular disease substantially contributes to disability and decreased quality of life. A recent economic evaluation showed that cardiovascular disease accounts for approximately 12% of the total European health care expenditures. However, this may be even an underestimation since the total economic impact on society is bigger due to productivity losses and informal care as result of chronic disease and disability. Urbanization and associated changes in lifestyle at one hand, and longevity at the other hand, will further increase the prevalence of cardiovascular disease in the coming years.

This thesis focuses on two ways in which the accurate interpretation of cardiac troponin concentrations may contribute to lower the burden of cardiovascular disease: The distinction of patients with and without myocardial infarction in the acute setting, and the identification of subjects at increased risk for future events based on basal cardiac troponin concentrations.

Target population

Since this thesis focuses on the optimization of interpretation of cardiac troponin concentrations in both the acute (diagnostic) and chronic (prognostic) setting, its findings are relevant for a large population. For example, whereas the novel insights on combining cardiac troponin T and cardiac troponin I for the early rule-out of acute myocardial infarction refer to emergency department patients, the results on the prognostic value of cardiac troponins are applicable to the general population.
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Valorization

Products

As already described in the discussion chapter of this thesis, many of our findings trigger further research. An example of a concept that requires additional research is the application of cardiac troponins for prognosis and prevention. In contrast, a more concrete and innovative concept is the combination of cardiac troponin T and cardiac troponin I for the diagnosis of acute myocardial infarction.

Implementation of combination testing in clinical practice

We showed that combining cardiac troponin T and cardiac troponin I in the diagnostic setting is highly promising to overcome the limited specificity of the separate assays. It results in a significant increase in patients in which acute myocardial infarction could be safely ruled-out at presentation (from approximately 10% to more than 40%). Therefore, the implementation of this combination strategy may have profound consequences for clinical practice since it may help to overcome unnecessary resource use, overcrowding of the emergency department and anxiety among patients. The fact that high-sensitivity cardiac troponin T and high-sensitivity cardiac troponin I assays do currently not run on the same platform and most laboratories have only one platform running 24/7 for routine measurements is an important obstacle for the introduction of this strategy in clinical practice. The development of (point of care) devices suitable for combined measurement – a project involving diagnostic companies, laboratories and physicians – is therefore crucial. Parallel, we should evaluate the optimal place of combination testing in the diagnostic chain – directly at presentation in the hospital or maybe even earlier at the general practice or in the ambulance setting –, and define optimal algorithms with optimal cut-off values, taking into account the effects of combination testing and the increased number of rule-outs at presentation downstream the diagnostic chain.
References


